

Caribbean Sea

The Caribbean Sea is a partially enclosed body of water in the Western Hemisphere, a western extension of the Atlantic Ocean. It is bordered by South America (Venezuela, Colombia) on the south, Central America (Panama, Costa Rica, Nicaragua, Honduras, Guatemala, Belize, Mexico) on the west, and the islands of the WEST INDIES on the north and east. The Yucatan Channel between Cuba and Yucatan connects the Caribbean Sea with the Gulf of Mexico, numerous passages between the islands join it to the Atlantic, and the Panama Canal furnishes access to the Pacific Ocean.

The West Indies, which form the nucleus of the Caribbean region, consist of two main groups: the Greater Antilles (Cuba, Jamaica, Hispaniola, and Puerto Rico) to the north and the Lesser Antilles, which again are subdivided into the Windward and Leeward islands, to the east. The major channels separating the islands are Windward Passage, between Cuba and Hispaniola; Mona Passage, between Hispaniola and Puerto Rico; and Anegada Passage, between the British and U.S. Virgin Islands.

The total area of the Caribbean Sea is about 2,500,000 sq km (965,000 sq mi). Several OCEAN DEEPS extend to depths greater than 7,000 m (23,000 ft). The greatest measured depth is the Bartlett Deep (7,239 m/23,744 ft) in the Cayman Trench between Cuba and Jamaica.

Discovered and first explored by Christopher COLUMBUS, the Caribbean was named after the CARIB, a warlike tribe of cannibalistic Indians that inhabited some of the Lesser Antilles at the time of the European conquest.

The sea is of major importance for international shipping to and from the Panama Canal and for its natural resources, including oil. It is also a major tourist and recreation area of the Western Hemisphere.

ENVIRONMENT

The fringes of the Caribbean are characterized by many small volcanic islands, coral reefs, and irregular shorelines. The floor consists of a complex structure of ocean ridges, trenches, and basins. The Jamaica Ridge, one of the major ocean ridges, runs from Honduras through Jamaica to Hispaniola and divides the sea into two major basins, western and eastern. The former is, in turn, divided by the Cayman Ridge into the Yucatan Basin, more than 4,000 m (13,120 ft) deep, and the Cayman Trough, the deepest part of the sea, more than 7,000 m (22,960 ft) deep. The Beata Ridge divides the eastern basin into the Colombian and Venezuelan basins, which are about 4,000 m (13,120 ft) and 5,000 m (16,400 ft) deep, respectively. The Aves Ridge separates the easternmost part of the sea, the Grenada Trough (3,000 m/9,840 ft), from the Venezuelan Basin. Other minor depressions include the Tobago Basin, the Virgin Islands Basin, the Dominican Trench, and the Cariaco Trench. The average depth of the basin floors is about 4,400 m (14,430 ft).

The bottom is composed of sedimentary rocks overlaid with carbonate marine sediments that consist mostly of tan to brown muds containing varying amounts of coarse organic and inorganic particles. The sediments average about 1,500 m (4,920 ft) in thickness, reaching a maximum of 12,000 m (39,360 ft) in the area of the Curacao Ridge.

The surface temperature of the seawater ranges from 23 deg C (73 deg F) to 29 deg C (84 deg F); the air temperature above it is always similar. Warm, moist air masses (maritime tropical) develop over these waters, and the climate is subject to an additional moderating influence from the northeasterly TRADE WINDS.

Winter air temperatures over the Caribbean average about 27 deg C (81 deg F) during the day and range from 21 deg to 24 deg C (70 deg to 75 deg F) at night. During July and August, the hottest months, temperatures approach 32 deg C (90 deg F). The windward sides of the islands and coasts receive 2,000 to 3,000 mm (78 to 117 in) of precipitation annually. Torrential rains fall during June, July, and August; February and March are usually the driest months. The interior valleys and the leeward sides of the mountains receive only 500-1,000 mm (20-39 in) of precipitation. The Caribbean is known for its long periods of fair weather; during the warmer months, however, the moist, tropical air becomes unstable and produces a variety of tropical disturbances. Afternoon thunderstorms, which are sometimes intense, are common over both land and sea. From late July through October, hurricanes also develop, and frequently cause great damage to adjacent land areas. (See HURRICANE AND TYPHOON.)

Surface-water temperatures show small seasonal variations. A well-developed THERMOCLINE exists at a depth of about 300 m (1,000 ft), below which temperatures are relatively uniform. At depths of 1,500 m (5,000 ft) or more, the water temperature remains at about 4 deg C (39 deg F) year-round.

The salinity of surface water varies from 34.93 to more than 36 parts per 1,000, depending on the amount of evaporation, precipitation, and surface runoff. It is, generally, lowest in the northern parts of the sea and highest in the southern parts.

Caribbean waters are composed of four water masses: surface water, subtropical subsurface water, subantarctic intermediate water, and North Atlantic deep water. Most of the channels between the sea and the open Atlantic are so shallow that only surface waters intermix. Thus the movement of water at depths greater than 1,200 m (3,900 ft) is sluggish. Because of the poor circulation, the waters at these depths contain little dissolved oxygen and, as a result, little marine life. Some of the deeper channels play a major role in the Caribbean circulation. The Guiana Current flows northwest along the South American coast and enters the Caribbean Sea through passages between the Windward Islands of the Lesser Antilles. The water follows the deepest path through the Caribbean and exits through the Yucatan Channel. Some oceanic UPWELLING also occurs along the coast of Colombia and Venezuela, where surface water is replaced by deeper water. The sea receives relatively little runoff water. Some of its largest tributary rivers are the Magdalena and Atrato of Colombia; the San Juan, Grande, and Coco of Nicaragua; the Patuca of Honduras; and the Motagua of Guatemala.

HISTORY AND ECONOMY

The Spanish were the first Europeans to explore the Caribbean. They eventually settled the Greater Antilles and either killed or absorbed the ARAWAK Indians native to the larger islands. The Antilles held a favored position because of their proximity to gold deposits, supply of Indian labor, easy access, fertile soil, and favorable climate. The region became known for its production of sugar, coffee, spices, and tropical fruits. The importance of the Antilles declined as the Spanish advanced into the New World through Mexico and Peru, and the islands mostly became supply bases. For centuries the Caribbean was a war zone fought over by European powers—England, France, Spain, and Holland—as well as pirates. In this century, the Windward Passage became a major shipping route between the eastern United States and the Panama Canal.

Many former island colonies in the Caribbean have gained independence since the early 1960s. Despite high standards of literacy, modernization and expansion of the fishing industry, and development of an oil industry (especially along the coast of Venezuela near Lake Maracaibo), most Caribbean nations remain overly reliant on tourism and a few exports (such as bauxite, sugar, and bananas) and depend heavily on imported food and fuel. Recent efforts to improve and diversify the fragile economy of the region include the founding of the ORGANIZATION OF EASTERN CARIBBEAN STATES in 1981 and the launching of the CARIBBEAN BASIN INITIATIVE in 1983.

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See also: OCEAN AND SEAS.

